

Introduction and Summary

It is roughly 10 seconds in length: a human voice singing a recognizable fragment of “Au Clair de la Lune.” Recorded on April 9, 1860, it is the earliest identifiable sound recording of the human voice. The recording was made by Parisian inventor Edouard-Leon Scott de Martinville on an instrument he called a phonautograph.¹ Scott’s invention was prompted by his interest in seeing the physical characteristics of sound waves.² His machine scratched sound waves on paper Scott had blackened using smoke from an oil lamp. Nearly 150 years later, through the use of a digital imaging workstation commissioned by the Library of Congress and designed by Lawrence Berkeley National Laboratory, the waves appearing on Scott’s phonautogram were translated into sound.

When the Scott phonautogram was unveiled in March 2008 at the annual conference of the Association for Recorded Sound Collections in Palo Alto, California, it drew worldwide attention. The hunt for the Scott phonautograms is nothing less than a recorded sound equivalent of an archaeological dig to locate and secure the permissions to make them available for study. Hearing the recognizable sound that lay in the wavy lines on that smoked paper is a profound experience—an encounter with real time and space in the mid-nineteenth century.

Recorded sound is captivating. It is a technology that has enabled us to physically etch, magnetically transcribe, or translate into

¹ The discovery and interpretation of Scott’s phonautogram was the work of First Sounds [www.firstsounds.org], in collaboration with the Lawrence Berkeley National Laboratory. The earliest of Scott’s phonautograms can be dated to 1853. First Sounds has discovered additional phonautograms, documented on their Web site and in the spring 2010 issue of the *ARSC Journal*.

² In his last years, Scott railed against Thomas Edison for usurping credit due to him; however, it was never Scott’s intention to reproduce sound, which was ultimately Edison’s purpose.

bytes a core part of the lived experience not only of this nation but also of the entire world. Recorded sound is more than music and entertainment; it encompasses the sounds of the streets, of nature, and of the vanished folk heritage of indigenous and transplanted cultures, as well as of important national events and precious moments in our own personal lives.

It is relatively easy to recognize the importance of recorded sound from decades ago. What is not so evident is that older recordings actually have better prospects to survive another 150 years than recordings made last week using digital technologies. In short, where recorded sound is concerned, age is no arbiter of what is endangered or what might be lost to future generations.

Many important recordings have been lost or have become unplayable since the introduction of recorded sound in the late-nineteenth century. Many others are at risk of becoming lost. It is unclear how large a universe of recordings will remain undocumented and allowed to deteriorate before additional resources are invested in their preservation.

Today's digital formats are not inherently safe harbors of preservation. Protecting and maintaining digital audio recordings poses problems that go beyond those associated with the preservation of analog recordings, and it requires that a totally new set of preservation techniques be developed. For example, successive releases of software programs may no longer be compatible with earlier files. Even without abuse, hard drives and servers crash. At worst, phonograms float to the floor.

Study Background

Two critical needs—the need to recognize the risk to a literal and metaphorical recording of our society, culture, and heritage, and the need to fashion a coordinated response to save and preserve sound recordings—underlie this study. The National Recording Preservation Act of 2000 (P.L. 106-474) established, under the purview of the Library of Congress, the National Recording Preservation Board (NRPB) and a National Recording Registry to maintain and preserve sound recordings that are “culturally, historically, or aesthetically significant.” The recordings are selected by the Librarian of Congress.³

The act also authorized that a study on sound recording preservation and restoration be prepared for Congress that reports on the following issues:

- (1) The current state of sound recording archiving, preservation and restoration activities.
- (2) Taking into account the research and other activities carried out by or on behalf of the National Audio-Visual Conservation Center⁴ at Culpeper, Virginia—
 - (A) the methodology and standards needed to make the

³ Sec. 124.

⁴ Subsequently designated in 2005 as the Packard Campus for Audio Visual Conservation.

- transition from analog “open reel” preservation of sound recordings to digital preservation of sound recordings; and
- (B) standards for access to preserved sound recordings by researchers, educators, and other interested parties.
- (3) The establishment of clear standards for copying old sound recordings (including equipment specifications and equalization guidelines).
 - (4) Current laws and restrictions regarding the use of archives of sound recordings, including recommendations for changes in such laws and restrictions to enable the Library of Congress and other nonprofit institutions in the field of sound recording preservation to make their collections available to researchers in a digital format.
 - (5) Copyright and other laws applicable to the preservation of sound recordings.

The 10 years between the enactment of P.L. 106-474 and the publication of this study have seen sweeping changes in digital technologies that have democratized the ability of individuals to make recordings and to manipulate sound in digital formats. A succession of new platforms enabling distribution of sound recordings have been introduced. During the past decade, the century-old business model for retail distribution of (largely) music recordings has imploded. Consequently, some of the technology and other details noted in this study may be mere snapshots of something that is in constant motion. Yet despite the pace of change, strengthening support for recorded sound preservation will require a continuing process, rather than fragmented solutions.

This study has been informed by a number of reports commissioned by the National Recording Preservation Board as well as by public hearings in Los Angeles and New York City, roundtables, written submissions from practitioners and other experts, and a bibliography of the literature on recorded sound preservation prepared specifically for this project. Several formal interviews were conducted to gather expert observations; many other encounters were informal yet equally productive.⁵

Scope of the Problem

The story of the state of recorded sound preservation begins with recognizing how little is known about the universe of existing sound recordings. This is reflected in key findings from chapter 1:

- Public institutions, libraries, and archives hold an estimated 46 million recordings, but few institutions know the full extent of their holdings or their physical condition.
- There is no correlation between the risk to sound recordings and their age. Recordings created in digital formats are at particular

⁵ The reports, as well as transcripts of the hearings and submissions, are available at <http://www.loc.gov/rr/record/nrpb/nrpb-clir.html>.

risk. Current programs to systematically preserve these recordings are inadequate.

- Many record companies have undertaken preservation programs. However, it is uncertain whether master recordings are being retained and preserved when there is no prospect for their reissue or for monetary gain from their digital distribution.
- Master recordings are now more often in the possession of the original artists than they used to be. Many of these recordings are at risk because they are not being properly stored.
- Few institutions have the facilities, playback hardware, and staff resources to preserve recordings. Of the many recorded sound formats that have fallen into obsolescence, some are more fragile than others. Specialized equipment is required to reproduce and preserve them.
- Many recordings believed to have been made of radio broadcasts are untraceable, and numerous transcription discs of national and local broadcasts have been destroyed. Little is known of what still exists, where it is stored, and in what condition. From the mid-1920s until well into the 1950s, radio was the nation's major source for entertainment and news, as well as a mirror of the times. Threatened here is more than the loss of sound recordings—it is the loss of an irreplaceable piece of our sociocultural heritage.
- Digital recordings distributed over the Internet, including radio, are not systematically collected for preservation.
- Privately held recording collections are often more comprehensive than publicly available collections held by institutions. Record and sound collectors often have sharply focused interests, defined by genre of music, specific performer, or both. It is important to help private collectors appreciate the importance of planning for placement of their collections, at the appropriate time, with archives where they can be protected and preserved.
- Funding and advocacy for recorded sound preservation is decentralized and inadequate. Recorded sound preservation has been declared a national objective; however, without greater support as a matter of public policy, this objective will not be realized.
- Resources must be invested not only in rescuing specific collections but also in developing techniques and methodologies that will enable more institutions to afford to assume a share of the work.

Complex Technical Landscape

The recorded sound story continues with the multiple formats that have served as sound carriers since the first voice and music recordings were made. These formats include cylinders and flat discs made of different materials, some of which hold up better than others against the passage of time, neglect, and improper storage. Analog disc recordings have been made for more than a century, but some digital formats and carriers (and software designed to make the digital content available) have had the briefest of lifetimes. Many

techniques can be used to stop the deterioration of sound recordings and make transfers that are as faithful as possible to the sources from which copies are struck. These techniques vary widely in scale and resource intensity, which gives rise to the need for preservation “best practices” and making the most prudent and productive use of the resources available to accomplish the work. Not every recording can be saved. What trade-offs are acceptable between hovering over a single transfer to assure a near-perfect copy, and monitoring an operation where copies of many different recordings are being created simultaneously?

Chapter 2 of this study provides an overview of the technical landscape, covering the rescue and preservation of sound recordings as well as what will be needed for maintenance and use of these digital files for decades to come. Among the findings in this chapter are:

- The capacity to adhere to current best practices for audio preservation is beyond the reach of most institutions. Preservation techniques and practices scaled for use by smaller institutions must be developed and disseminated.
- Digital preservation requires a sophisticated information technology infrastructure and an ongoing process to maintain the integrity of digital files well into the future. Most institutions lack these capacities.
- The pace of the transition to professional digital preservation is governed by many issues that are not yet resolved. These include agreement on minimal requirements for administrative and technical metadata to accompany digital preservation files and the development of tools to create metadata efficiently. Until such questions are answered, we will have no assurance that digital preservation files are being sustained for the long term.
- There is unnecessary redundancy in preservation efforts. Technical, administrative, and legal means must be developed to enable institutions to share data about recordings held in common and to locate source recordings that are in the best condition to serve as candidates for preservation. Institutions should have the means and legal sanction to share preservation files of these recordings.
- Depending on CD-Rs as a medium for storing preservation files is ill advised and has placed preservation programs at great risk. Few institutions have programs to periodically migrate audio files to new CD-Rs or to other digital storage media. Digital repositories, where files can be properly stored, kept accessible, and managed in perpetuity, are essential.

Need for Preservation Education

The curation and management of digital preservation files of sound recordings calls for implementing a process that recognizes that (1) the preservation of sound recordings demands perpetual attention, including periodic migration of preservation files to new formats, and (2) additional copies of sound recordings must be dispersed geographically to protect against loss. Implementing this process

will depend upon the existence of a trained cadre of engineers and technicians who are knowledgeable about obsolete media and the hardware or software that unlocks them. Chapter 3 of this study, devoted to audio preservation education, sets forth several constructs that could be part of a curriculum devoted to recorded sound preservation. It also describes specific jobs for which such a curriculum could prepare candidates. Themes discussed in the chapter include the following:

- Degree programs to train professional audio archivists are nonexistent. Several universities offer courses that relate to audio preservation, but none offers degree programs that train professionals in audio preservation and archives management. Developing such programs must be a priority.
- Opportunities for continuing education and professional development are necessary.
- A generation of specialists with experience in making transfers from legacy media is disappearing.
- Selecting recorded sound collections to be preserved and setting priorities for their preservation will require that managers have a grounding in the history of the period of these recordings. Only with such a foundation will they be able to assess the aesthetic and cultural impact of the recordings.
- Audio archivists and curators need a blend of theoretical, managerial, and technical skills. Directors of archives will require training in organizational theory and behavior, contracting and project management, facilities planning, cost analysis, and budgeting.

The Copyright Conundrum

Copyright law and interests in protecting intellectual property are a final thread (or perhaps a seemingly unyielding tangle) in the environment affecting recorded sound preservation. At issue is how copyright law might be amended, or simple licensing mechanisms developed, to bring rightful protection of intellectual property into better balance with digital technology, thereby furthering the interests of recorded sound preservation. The availability of otherwise out-of-print commercial recordings, coupled with expectations fostered by the Internet that access should be immediate, are at the foundation of tensions between rights holders and users.

In many instances, early commercial recordings may be unavailable from rights holders. As reported in the *Survey of Reissues of U.S. Recordings*, a study commissioned by the NRPB, “ten percent or less of listed recordings have been made available by rights holders for most periods prior to World War II. For periods before 1920, the percentage approaches zero.”⁶ It once might have required a long and frustrating quest to acquire or hear a rare recording; today, the

⁶ Tim Brooks, *Survey of Reissues of U.S. Recordings* (Washington, DC: Council on Library and Information Resources and Library of Congress, 2005), 11–14, “Summary of Key Findings and Conclusions.” Available at <http://www.clir.org/pubs/reports/pub133/summary.html>.

Internet has made it possible to locate such a recording with a single search string or communication to a listserv. The proliferation of digital platforms and the ease with which sound recordings can be uploaded and shared are of justifiable concern to rights holders who cannot control the appropriation of their intellectual property.

There are some promising initiatives, referenced in the treatment of copyright in chapter 4 of this study, that can reconcile the demand for out-of-print recordings and the participation of, or sanction from, rights holders. The voices and opinions quoted in the chapter also clearly show, however, that advocates for competing and legitimate objectives are nowhere near any reconciliation.

The following are among the findings presented in chapter 4:

- Were copyright law followed to the letter, little audio preservation would be undertaken. Were the law strictly enforced, it would brand virtually all audio preservation as illegal. Copyright laws related to preservation are neither strictly followed nor strictly enforced. Consequently, some audio preservation is conducted.
- Libraries, archives, and other public and privately funded institutions are finding it virtually impossible to reconcile their responsibility for preserving and making accessible culturally important sound recordings with their obligation to adhere to copyright laws.
- Privileges extended by copyright law to libraries and archives to copy sound recordings are restrictive and anachronistic in the face of current technologies, and create only the narrowest of circumstances in which making copies is fully permissible.
- The perception that recordings held by institutions are unlikely to be accessible discourages private collectors from depositing their holdings with institutions.
- Collections in need of preservation may not receive funding if, once preserved, they will not be available for off-site listening.
- Copyright reform is not the sole area in which congressional action is needed, but it remains the key solution to preserving America's recorded sound history, protecting ownership rights, and providing public access.
- Revision of copyright laws will require significant compromises by all affected communities. Although achieving a consensus on copyright reform seems elusive at present, it is critical to develop innovative approaches and programs that can bring preservation and access into compliance with copyright law.
- Closer cooperation between copyright holders, intellectual property owners, and libraries is essential and could be advantageous to all parties. Efforts must be made to draw attention to the common ground on which change can be built.

The Internet and development of digital technology have unleashed a paradigm shift. At one time, support for preservation of the arts did not carry with it the expectation of access to a restored work. Today, preservation and access have become joined, locked together in the realm of sound recordings. This phenomenon has

the potential to undermine efforts to attract support for preservation of sound collections, especially collections of noncommercial recordings, for which there can be no guarantee of access because the rights are unclear or do not convey with the collection. The expectation of access has not only fostered conflict between rights holders and potential users but also put rights holders into conflict on a new front, namely, with libraries and archives. Funding requests for the preservation of sound collections must compete against requests for preservation of other media to which ready access is legal. In short, however much copyright law appears at first glance to have little bearing on the prospects for recorded sound preservation, it is as central a challenge as are the challenges presented by technology and education.

Saving our Recorded Sound Heritage

The authors of this study acknowledge that a close, cover-to-cover reading of this volume is not a casual undertaking. At times, readers may feel smothered in minutiae or in concepts that can only be described as opaque. They may find themselves asking, after wading through discussions of metadata, sticky-shed syndrome, Section 108, and digital repositories, “Must this all be so complicated?” The audience for this study is diverse. Some sections will be of greatest interest to sound engineers; other sections will be relevant primarily to academics. Still others may be of value to stakeholders with interests in copyright and intellectual property law. This diversity should not, however, distract from the fundamental story presented here, which is of critical importance to policy makers, specialists, historians, and professionals of every stripe—indeed, to *anyone* who has ever been stirred by a sound recording.

As already acknowledged, we cannot save every recording. What, then, do we save? Many considerations will come to bear on those decisions. Making them wisely will require the input of people with a certain measure of cultural literacy and a knowledge of history—people who understand that it is not enough to preserve sound recordings already judged to be historically and culturally significant. Significance is too often recognized and conferred only after the passage of years. We do not have the luxury of waiting until the significance of a sound recording is apparent before its preservation begins. By then, it may be too late.

This study will be followed by publication of a national plan developed on the basis of the recommendations of task forces convened to discuss the findings presented here. The success of this effort will be assured if, at the end of this process, the discussion no longer begins with the question, Why preserve?, but with the rhetorical one, How can we not?